

WAF 3: CSS, BRA/RI/FS/ROD, AA, ABS, PE, General Investigative

- **WAF 3 Manager – Mark Raney**
- Major Support Activities Included
 - Ambient Air Program
 - ABS Study (initiated under WAF 3)
 - Processing Areas
 - General Investigative

95



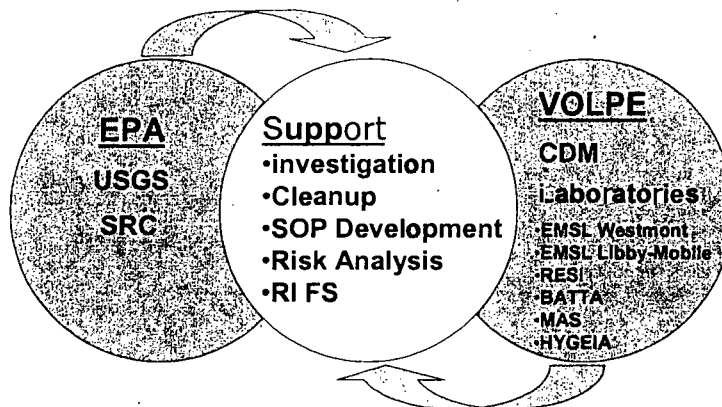
US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

Investigative, Analytical & Risk Assessment Support



96



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: CSS, BRA/RI/FS/ROD, AA, ABS, PE, General Investigative

■ WAF 3 Manager – Mark Raney

■ Major Support Activities Included

- Ambient Air Program
- ABS Study (initiated under WAF 3)
- Processing Areas
- General Investigative

95



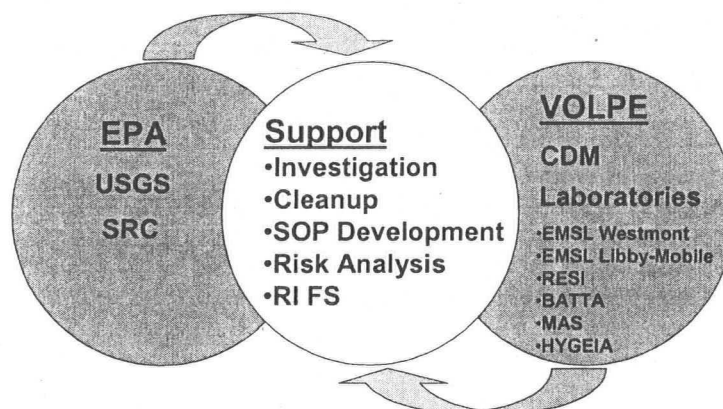
US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

Investigative, Analytical & Risk Assessment Support



96



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Ambient Air Program (OUs 1, 2, 4, 5, & 6)

■ Timeline:

October 3, 2006 – Started AA sampling

- 14 OU4 locations
- 2 background locations (Helena & Eureka)
- Custom hardwired housings
- Sampling schedule = 10 day schedule (5 days on and 5 days off)
- 0.00004 S/cc = Target Analytical Sensitivity
- MET Data – Downloaded from 3 NOAA Stations
- Collocated High Volume (14,000 L) & Low Volume (10,500), 25mm, 0.08 p Samples
- Comparison samples 0.45 p samples & adult/child height samples
 - October 2006 (2 events) - 6 Locations
 - February (2 events) & June (1 event) 2007 – 4 Locations (two sampled per event)

97



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Ambient Air Program (OUs 1, 2, 4, 5, & 6)

■ Timeline Cont...:

December 7, 2006 - Final, Revision 1, SAP for Outdoor Ambient Air Monitoring
Operable Unit 4, Libby Montana, with modifications

April 21, 2007 – Rod of rebar was pierced through wall of housing unit and
samples damaged at Indian Head Rd (Piummer Elementary

July 3, 2007 - Final Addendum, SAP for Outdoor Ambient Air Monitoring,
Former Processing Areas, Operable Units 1, 2, 5, and 6

July 18, 2007 – Expansion Event 1: 3501 Haul Rd (KDC Bluffs area)
& 4500 Hwy 2W (near BNSF rail)

98



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Ambient Air Program (OUs 1, 2, 4, 5, & 6)

■ Timeline Cont...:

- August 3, 2007 – Expansion Event 2: Fisher River bridge site
- August 12, 2007 – Samples stolen from Indian Head Rd (Plummer Elementary)
- August 19, 2007 – Expansion Event 3: KDC Flyway (5002 Hwy 37 N)
- October 1, 2007 – 7 of the original 14 OU4 sites and 1 background site (Eureka) discontinued (Event 34)
- October 1, 2007 – Cease collection of 0.45 p samples, adult/child height samples, and reduces sample collection for OU4 to 5 days on, 15 days off

99



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Ambient Air Program (OUs 1, 2, 4, 5, & 6)

■ Other Sampling Issues:

- Various times throughout the year, power outages at select locations have resulted in voided samples
- Reanalysis of Events 1-3, according to Lab MOD 66
 - characterize particles classified as LA, based on levels of sodium and potassium peaks observed in the EDS

■ Collection (to-date):

- 35 OU4 and 7 expansion air monitoring events successfully collected
- Total of 1,745 ambient air (AA-XXXXX) samples collected

100



US Department of Transportation
John A. Volpe National Transportation
Systems Center

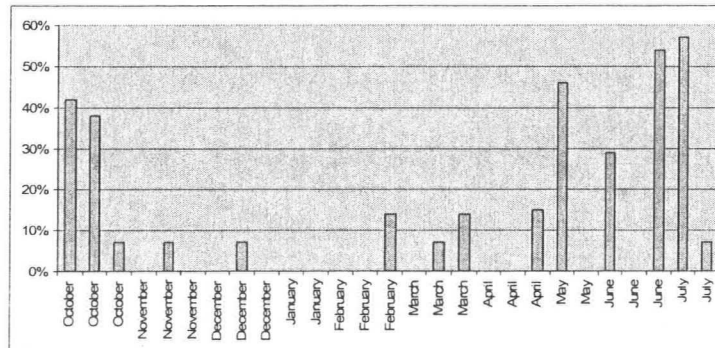


US Environmental
Protection Agency
Region 8

CDM

WAF 3: Ambient Air Program

OU 4 - Detection Frequency by Month (total LA) (according to SRC Nov Monthly Report)



101



US Department of Transportation
John A. Volpe National Transportation
Systems Center

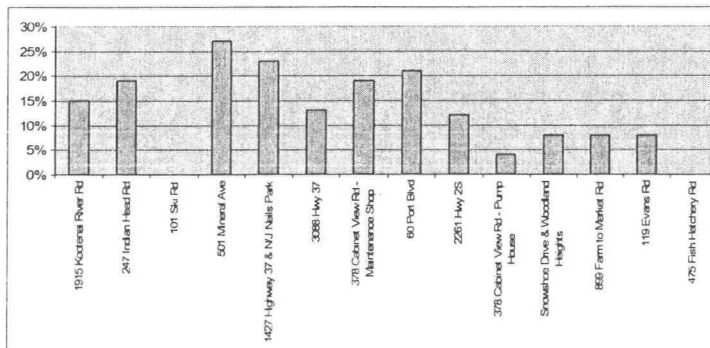


US Environmental
Protection Agency
Region 8

CDM

WAF 3: Ambient Air Program

OU 4 - Detection Frequency by Location (total LA) (according to SRC Nov Monthly Report)



102



US Department of Transportation
John A. Volpe National Transportation
Systems Center

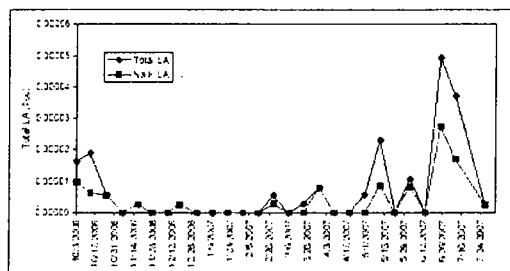


US Environmental
Protection Agency
Region 8

CDM

WAF 3: Ambient Air Program

OU 4 – Mean Concentration (all Libby Stations) (according to SRC Nov Monthly Report)



Results from July 15-23, 2007 were not available in the Lot y2 Database as of 10-24-07.

103



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Activity-Based Study (ABS)

■ Task Manager – Michelle Heimgartner

April 18, 2007 - Draft SAP for Indoor Air Monitoring, Operable Unit 4

Draft SAP for Indoor Air Monitoring, Operable Unit 4

July 6, 2007 - Final SAP for Indoor Air Monitoring, Operable Unit 4

Final SAP for Indoor Air Monitoring, Operable Unit 4

■ Four Sampling Events

■ Interior ABS (4 events)

■ Exterior ABS (2 events)

■ Event 1: July 9th - August 29th, 2007

104



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Activity-Based Study (ABS)

■ Property Selection

- Identified list of 285 potential properties meeting bin criteria
- 60 of 285 properties agreed to participate
- Remaining properties discovered through intense community outreach
- 106 properties selected for Indoor ABS, Outdoor ABS, or a combination

■ Soil sampling and property-wide VV investigation

- VV investigations conducted at 118 properties
- Soil Samples collected at 94 properties

■ Some properties were placed into different Bins as a result of soil sampling and VV

105



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Activity-Based Study (ABS)

■ Event 1 ABS Summary:

- A total of 387 ABS scenarios conducted at 106 different properties
- 4 Sampling Teams (6 people)
 - Exterior - two teams of 3 people
 - Interior - two teams of 3 people
- Additional ABS Support Staff
 - Field Team Leader (FTL)
 - Community Involvement Coordinator (CIC)
 - Sample Coordinator
 - Health & Safety

106



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Exterior ABS

- **Target of 15 Homes per Category (total = 75)**
- **Total of 75 Locations at 62 Different Properties**
 - Some properties had multiple "sub areas" with varying levels on surficial contamination

Soil Category	Residential Source	
	PLM-VE	Visual Vermiculite
1	None (clean fill has been added)	
2	Bin A (ND)	No
3	Bin A (ND)	Yes
4	Bin B1 (<0.2%)	Either Yes or No
5	Bin B2 (0.2%-1%)	Either Yes or No

107



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Exterior ABS

- **Each House Completed in One Day***
 - Each team required approx. 8 to 9 hours to complete each property:
 - 1 to 1.5 hours of setup (including soil sample & GPS collection)
 - 6 to 7 hours of scenario ABS sampling
 - 1.5 hours of tear down & paperwork
 - After mod for overloaded air cassettes on 8/16/07, less time was spent at each property and multiple properties sampled daily

108



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Exterior ABS

- **Three Scenarios Conducted per Property**
(total of 225 diff. scenarios)
 - Lawn mowing scenario
 - Raking scenario
 - Child's play scenario
- **Field Soil Moisture & Texture Tests**
- **Total = 529 Field Samples**
 - Air samples = 450 (includes 225 high + 225 low Volume)
 - Target Analytical Sensitivity = 0.001 S/cc
 - Soil samples = 79 (includes FD samples)

109



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Interior ABS

- **Total of 81 Properties (target = 80 properties)**
 - *One additional property included due to the uncooperativeness of one homeowner during Event 1

Category	Did Outdoor Soil Cleanup Take Place?	Post-cleanup Surface Soil	
		VCS	PLM Detect
1	No	-	and -
2		+	or +
3	Yes	-	and -
4		+	and -

110



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Interior ABS

■ Most Houses Completed over Two Days

- 7 Properties - passive/active conducted consecutively on the same day
- Each team conducted one scenario at two separate houses per day
- Approx. 5 to 6 hours for each scenario/house:
 - 1 hour of setup (including pre condition documentation & dust sampling)
 - 4 to 4.5 hours scenario ABS sampling
 - 1.5 hours of tear down & paperwork

■ Two Scenarios Conducted at Each Property

(total of 162 separate scenarios)

- Active scenario
- Passive scenario

111



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Interior ABS

■ Total Number of Field Samples = 618

- Air Samples = 322
 - 161 High + 161 Low volume
 - Target Analytical Sensitivity = 0.0002 S/cc
- Dust Samples = 101
 - Includes FD samples & when samples collected per floor
 - Target Analytical Sensitivity = 20 S/cm²
 - 10 Composite Points (optimal 4 accessible, 4 infrequently accessed, & 2 inaccessible areas)
- Soil Samples = 195 (includes FD samples & soils from properties that later refused or no longer fit contamination criteria)

112



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Processing Areas (OUs 1, 2, 8, & 6)

- Task Manager - Amishi Castelli

- Processing Areas

- OU1 (Export Plant)
- OU2 (Screening Plant)
- OU5 (Stimson)
- OU6 (BNSF)
- Data Summary Report (DSR)
- Conceptual Site Modal (CSM)
- Data Gap Analysis
- Data Gap SAP

113



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Processing Areas (OUs 1, 2, 5, & 6)

- OU1 (Export Plant)

- DSR - developed & finalized
- CSM - developed & finalized
- Data Gap Analysis - developed & finalized
 - Showed need to collect further soil and indoor ABS samples
- Data Gap SAP - developed & finalized
- Sampling began in September 2007

- OU2 (Screening Plant)

- Limited to Planning Discussions

114



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: Processing Areas (OUs 1, 2, 5, & 6)

■ OU5 (Stimson)

- DSR - developed to Draft Final stage
- CSM - developed & finalized
- Data Gap Analysis (soil & wood chip/waste bark) - developed & finalized
 - Showed need to collect soil & wood chip/waste bark samples
- Data Gap SAP (soil & wood chip/waste bark) - developed & finalized

■ OU6 (BNSF)

- DSR - developed to Draft Final stage
- CSM - developed to Draft Final stage

115



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: General Investigative

■ Lab Management & Analytical Method Development & Modification

- Prioritization and Coordination of Project Analytical Support
- New Indirect Prep SOP
- Standardizing LA Analysis Characterization across labs, spectra reviews, etc.
- Support of Analytical Validation Activities
- Job Specific and Method Modifications, Etc.

■ Participation in TAU Calls & Development of Tech Memos & Studies

- Tech Memos # 8, 11, etc.

■ Analysis of SQAPP Samples

- Including Task 6-9 samples (following new TEM indirect SOP)

116



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 3: General Investigative

- **Development and Modification of Field SOPs**
 - SOP for Semi-Quantitative Visual estimation of Vermiculite in Soil
 - 30-pt Soil Sampling SOP
 - Dust Pilot Study, SOP for 30/10-pt Dust Sampling
 - Comparison of ERT ABS & OU4 ABS SAPs
 - Pilot Study for Shipping Cassettes Upright
 - Field SOP Modifications, Etc.
- **Unplanned Site Investigations**
- **Development of Project SAPs, such as Site Wide QAPP**
 - Draft – awaiting comments

117



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 7: Troy Support

- **WAF 7 Manager – Mark Raney**
- **Major Support Activities Included**
 - TAPE Development (review & comments)
 - Mentoring of Sampling Teams
 - Analyzed Personal Monitoring Samples
 - Analysis of Dust Samples (1,200+)
 - Soil Prep Lab Mentoring
 - Lab Mentoring (PLM & TEM)
 - Evaluated/Prioritized 23 Troy Properties for Cleanup

118



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 8: Toxicology Studies

- **WAF 8 Manager – Mark Raney**
- **Task Manager – Amishi Castelli**
- **Major Support Activities Include**
 - ABS Study (initiated under WAF 3)
 - June 2007 - technical experts at LA Research Planning Meeting (RTP, NC)
 - July 23rd-24th Epidemiological Meeting Support (Denver)
 - SRC Risk Assessment Support (contract established May 2007)
 - Electronic Conversion of Historic WR Grace Hardcopy Worker Data
 - Initiated procurement for White Paper on Fiber-like Structures
 - Supported USGS Collection of Dosing Material at Mine

119



US Department of Transportation
John A. Volpe National Transportation
Systems Center

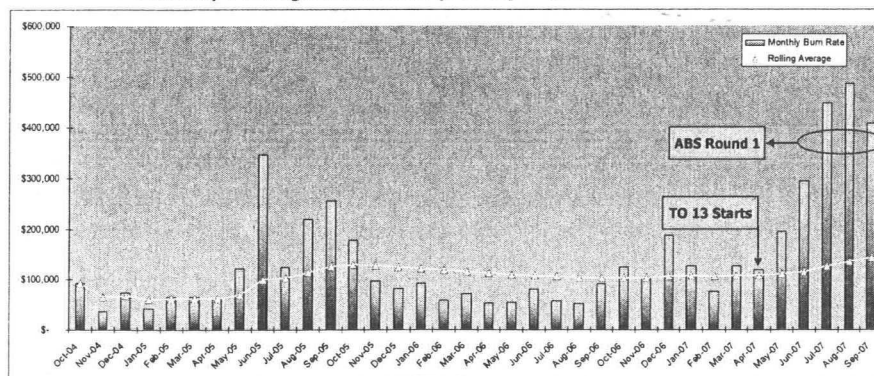


US Environmental
Protection Agency
Region 8

CDM

Investigation Cost Breakdown

- **CDM TO 6 and 13: Investigations and Analytical**
 - Total TO Value (projected): TO6 – \$3.6M; TO13 - \$4.2M
 - Monthly Average Burn Rate (actual) = \$104K



120



US Department of Transportation
John A. Volpe National Transportation
Systems Center

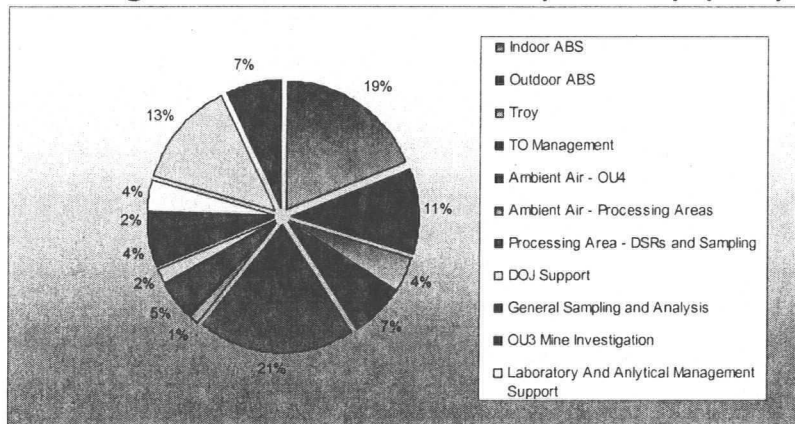


US Environmental
Protection Agency
Region 8

CDM

Investigation Cost Breakdown

■ Investigation Cost Breakdown by Activity (ITD)



121



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

Investigation and Laboratory Cost Breakdown

■ Program Analysis

- Investigation and Analytical Support was 24% of CDM's 2007 budget (up from 11% in 2006)
- 69% of these costs are contained in four programs
 - ABS – 30%
 - AA – 21%
 - RI/FS – 13%
 - Processing Areas – 5%
- Opportunities for Cost Savings
 - Finalize AA
 - Finalize ABS
 - Move to RODs on Processing Areas
 - Implement procedures that reduce sample collection across all program (e.g., PDI, Oversight, Troy, Mine)

122



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

WAF 9: Mine Investigation Support

■ WAF 9 Manager – Bill Halloran, PMP

- Community Involvement Support
- Field Implementability of SAP
- Oversight of PRP Field Activities
- General Technical Support

123



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

Mine Investigation Support

■ 2007 Accomplishments

- Community Involvement
 - Obtained meeting space for OU3 Stakeholder meeting
 - Assisted in arranging and conducting site tours for OU3 stakeholders

124



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

Mine Investigation Support

- 2007 Accomplishments (continued)
 - Field Implementability of SAP and HASP
 - Review was performed on the implementability of the SAP and HASP. Comments were incorporated into the plans by EPA
 - Selected and marked sampling locations for the Phase I sampling effort. Locations were selected based on Volpe/CDM reconnaissance activities. A total of 66 sample locations were identified and physically marked with surveyor's lathe. GPS coordinates were collected for each of the following locations:
 - Ambient air – 8 locations
 - Surface water and sediment – 26 locations
 - Mine waste – 29 locations
 - Rainy Creek Rd Bed – 3 locations

125



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

Mine Investigation Support

- 2007 Accomplishments (Continued)
 - Oversight of PRP Field Activities
 - Provided independent oversight support of W.R. Grace's Mine (OU3) Phase I Sampling Effort
 - Developed 4 Audit Checklists (Tree Bark and Soil, Surface Water and Sediment, Mine Waste, and Ambient Air)
 - Attended daily tailgate meetings for updates on planned daily activities

126



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

Mine Investigation Support

■ 2007 Accomplishments (Continued)

■ Oversight of PRP Field Activities (continued)

- Performed field audits of sampling activities performed by W.R. Grace's contractor (MWH) at 66 distinct sample locations:
 - 20 Tree bark and soil samples – 10/3, 10/5, 10/8, and 10/11/07
 - 16 ambient air samples – 10/4 and 10/9/07
 - 8 surface water samples – 10/12, 10/16, and 10/17/07
 - 5 tailings impoundment transect samples – 10/16 and 10/17/07
 - 5 mine waste samples – 10/11 and 10/15/07
 - 6 stream sediment samples – 10/15 and 10/16/07
 - 6 stream discharge gauging – 10/18/07

127



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 5

CDM

Mine Investigation Support

■ 2007 Accomplishments (Continued)

■ Oversight of PRP Field Activities (continued)

- Provided regular briefings to EPA on sampling effort and audit findings
- Prepared final report documenting the audit activities and results. Several minor deficiencies or deviations from the approved SAP were noted:
 - Sampling personnel did not change gloves between tree bark and soil samples collected from the same location.
 - Tree bark samples were collected from trees under the minimum diameter requirement of 8"-12" at 8 locations.
 - No Douglas Fir trees in the immediate sample area met this minimum diameter requirement.
 - Soil/duff samples collected at 2 tree bark and soil sample locations were collected as 4-point composites instead of the required 5-point composites.
 - Sufficient soil/duff material was not present at the 5th sub-sample location
 - During surface water sampling activities, the multiprobe electronic meter was not decontaminated in accordance with OU-3 SOP Number 3
 - Surface water samples and stream discharge measurements were not taken at the same time/day.
 - Stream flow measurements were taken in turbulent water

128



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

Mine Investigation Support

■ 2007 Accomplishments (continued)

■ General Technical Support

- Worked with the USFS to coordinate response needs for the Vermiculite Mountain forest fire
- Participated in a post-response recap meeting with USFS and EPA to evaluate the response to the Vermiculite Mountain fire, and to begin thinking of long-term needs to fighting fires on Vermiculite Mountain
- Investigated laboratories with capabilities needed to support all of OU3's asbestos and non-asbestos analytical requirements.
- Identified two laboratories, EMSL and Alpha Woods, to support both OU3's asbestos and non-asbestos analytical requirements.
- Coordinated with EMSL to provide an exemption to the project's conflict of interest constraints, in order to permit EMSL to work for WR Grace's contractor in Libby.

129



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

Laboratory Support

130



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

Laboratories

- Close Support Facility (CSF).....Denver, CO
- Project Asbestos Laboratories
 - EMSL Mobile Lab.....Libby, MT
 - EMSL Analytical, Inc.....Westmont, NJ
 - Reservoirs Environmental, Inc.....Denver, CO
 - Hygeia Laboratories, Inc.....Sierra Madre, CA
 - MAS.....Suwanee, GA
 - BATTA.....Newark, DE
 - LabCor (to undergo mentoring).....Seattle, WA
 - Asbestos TEM (to undergo mentoring).....Berkeley, CA

131



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

Laboratory Capabilities

Laboratory	SEM	TEM	PLM	PCM	XRD
EMSL-Mobile		√	√	√	
EMSL-Analytical	√	√	√	√	√
Reservoirs	√	√	√	√	
Hygeia		√	√	√	
MAS	√	√	√	√	√
BATTA		√	√	√	
LabCor	√	√	√	√	√
Asbestos TEM	√	√	√	√	√

132



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM

Laboratory Capacity

Laboratory	Number of Analysts			
	AHERA	ISO	Add. ISO in Training	Comment
EMSL-Mobile	1	1		
EMSL-Analytical	4	4	10	To be complete in November
Reservoirs	5	4		
Hygeia	3	2		
MAS	3.5	3.5		Includes one part-time analyst
BATTA	3	1	1	
LabCor	1	1		To Undergo Lab Mentoring
Asbestos TEM	1	1		To Undergo Lab Mentoring
TOTAL	21.5	17.5	11	

133



US Department of Transportation
John A. Volpe National Transportation
Systems Center



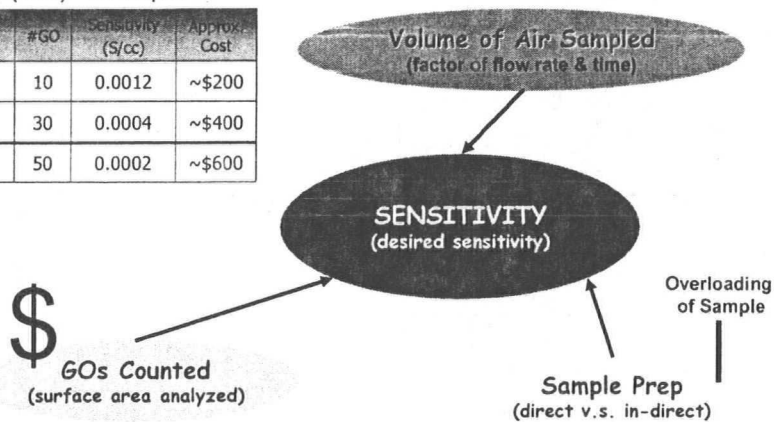
US Environmental
Protection Agency
Region 8

CDM

Capacity & Costs - Balancing Act

TEM (ISO) - Example

Volume of Air (Liters)	#GO	Sensitivity (S/cc)	Approx. Cost
2,500	10	0.0012	~\$200
2,500	30	0.0004	~\$400
2,500	50	0.0002	~\$600



134



US Department of Transportation
John A. Volpe National Transportation
Systems Center



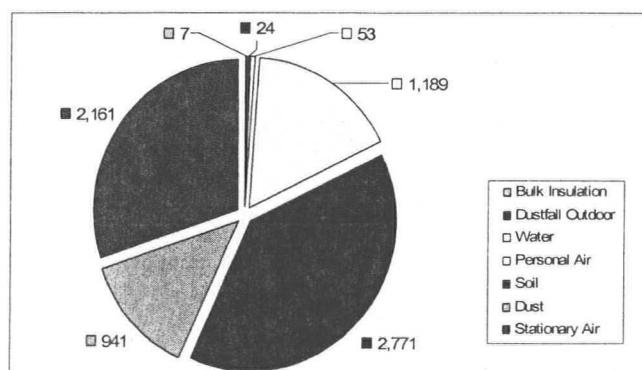
US Environmental
Protection Agency
Region 8

CDM

Breakdown of 2007 Asbestos Analyses

7,146 Analyses

(as of August ANSETS Report)



135



US Department of Transportation
John A. Volpe National Transportation
Systems Center



US Environmental
Protection Agency
Region 8

CDM